NOTES.

THE seventy-fourth annual meeting of the British Association will commence at Cambridge on Wednesday, August 17. The president elect is the Right Hon. A. J. Balfour, and the presidents of the sections will be as follows:—A, mathematical and physical science, Prof. Horace Lamb, F.R.S.; B, chemistry, Prof. Sydney Young, F.R.S.; C, geology, Mr. Aubrey Strahan, F.R.S.; D, zoology, Mr. W. Bateson, F.R.S.; E, geography, Mr. Douglas W. Freshfield; F, economic science and statistics, Prof. W. Smart; G, engineering, Hon. C. A. Parsons, F.R.S.; H, anthropology, Mr. Henry Balfour; I, physiology, Prof. C. S. Sherrington, F.R.S.; K, botany, Mr. Francis Darwin, F.R.S.; L, educational science, the Lord Bishop of Hereford; conference of delegates of corresponding societies, chairman, Principal E. H. Griffiths, F.R.S. On Friday evening, August 19, a discourse on "Ripple Marks and Sand-dunes" will be given by Prof. G. H. Darwin, F.R.S.; and on Monday, August 22, Prof. H. F. Osborn will deliver a lecture on "Recent Explorations and Researches on Extinct Mammalia."

THE King has approved of the award of the Royal Geographical Society's Royal medals for this year to Sir Harry Johnston and Commander R. F. Scott, R.N. The award to Sir Harry Johnston is made for his explorations of Africa and his investigations of African fauna, flora and peoples; that to Commander Scott for the work accomplished by the Antarctic expedition during its first year in the Antarctic, and for his Antarctic sledge journey when he travelled nearly 300 miles farther south than any of his predecessors. The Murchison grant of the Royal Geographical Society has been awarded to Lieut. Colbeck for his services while in command of the Antarctic relief expedition. The Gill memorial is to be presented to Captain Irizar, of the Argentine Navy, for his rescue of the Nordenskjöld Antarctic expedition. The Cuthbert Peek grant has been awarded to Don Juan Villalta for his geographical discoveries to the east of the Andes while in command of a Peruvian exploring expedition; and the Back grant to Dr. M. A. Stein for his geographical work in Central Asia, and especially for his mapping in the Mustaghata and Kuen Lun ranges.

REUTER reports that two rather severe shocks of earthquake were felt on Monday afternoon at Temir-khan-shura, in the province of Daghestan, in the Caucasus.

THE twelfth "James Forrest" lecture of the Institution of Civil Engineers will be delivered by Mr. Dugald Clerk on Thursday, April 21, the subject being "Internal Combustion Engines."

A SEVERE storm was experienced in the island of Réunion on March 21 and 22. The barometer fell to nearly 28 inches. The damage appears to have been very great.

THE *British Medical Journal* announces that Dr. Percival Wright has resigned the chair of botany in Trinity College, Dublin, after thirty-six years' service. He has consented, however, to continue to act as keeper of the herbarium.

GENERAL BASSOT has been appointed director of Nice Observatory in succession to the late M. Henri Perrotin. General Bassot is a member of the Bureau des Longitudes, and succeeded the late M. Faye as president of the International Geodetic Association last year.

THE following motion was agreed to by the council of the Central and Associated Chambers of Commerce at a meeting held on Tuesday:—"That this Chamber would welcome a measure to facilitate a more practical system of weights and measures than now in use in this country by the introduction of a decimal system, but not by adopting the metric system, which has no affinity to any existing denomination used in trade or commerce in the United Kingdom."

SOME important changes in the constitution and management of the New Zealand Institute were made during the last session of the New Zealand House of Representatives. Under the New Zealand Institute Act of 1867 the institute was controlled by a board of governors consisting chiefly of members nominated by the Government, the different local institutes (now eight in number) incorporated with the institute being represented only by three members chosen by the board from nominations made by these eight incorporated institutes, and the director of the Geological Survey was by the Act made the permanent manager of the institute. This position has been filled for thirty-five years by Sir James Hector, under whose editorship the first thirty-five volumes of the *Transactions* of the new institute have been published. Shortly after Sir James Hector retired, at the end of June, 1903, an Act was passed by the New Zealand Parliament by which the institute was separated from the Geological Survey, the Colonial Museum and other Government departments with which it had been more or less intimately associated in the past, and at the same time the constitution of the board of governors was altered, so that it now consists of the governor, the Colonial Secretary, four members nominated by the Government, two elected by each of the incorporated institutes at Auckland, Wellington, Christchurch and Dunedin, and one by each of the institutes at the smaller centres. The whole control of the institute and of the publication of its *Transactions* is entrusted to this board, which has also the power of electing the president of the institute. The first meeting of this newly constituted board was held in Wellington in January last, when Captain F. W. Hutton, F.R.S., was unanimously elected president, and Mr. A. Hamilton, curator of the Colonial Museum at Wellington, was made editor of the *Transactions*. The board decided to direct the attention of the Government to the urgent necessity of investigating the fauna and flora of the outlying islands of New Zealand and of preserving them so far as possible from destruction. Other matters of more local interest were dealt with, and the board showed that it is likely to be a vigorous body, and will leave no stone unturned in its efforts to advance the interests of science in New Zealand.

REFERRING to a note in the issue of March 17 commenting on an article by him in the *Field Naturalists' Quarterly*, Mr. R. H. Wallace writes to say that the schemes of work in connection with spring flowers to which attention was directed in our note "are schemes that have been actually carried out by their authors in the schools they represent."

THE directors of the Cunard Company have decided to adopt turbines in the new fast steamers to be built under the agreement with the British Government. A committee was appointed by the company last September to consider the question, and its report has been presented to the directors. The work of the committee has been largely experimental. Two series of comparative tests have been carried out, one on shore at the Neptune Bank station of the Newcastle-on-Tyne Supply Company, and the other afloat with the steamships *Arundel* and *Brighton*, of the Newhaven-Dieppe route. The results obtained with the two steamships were exactly comparable, as the *Arundel* and *Brighton* are practically sister vessels. The only difference is in the machinery, the *Brighton* having turbine engines and the *Arundel* reciprocating engines. During the whole period of the investigations the committee has realised that fitting turbines of the dimensions necessary to propel the new Cunard ships at the speed contemplated involves a very great step in marine propulsion, the largest turbines at present in use afloat being those in the steamship *Queen,* engaged on the Calais-Dover service.

We have received a copy of *Deutsches Meteorologisches Jahrbuch für* 1902, containing the results of the meteorological observations at the stations under the control of the Deutsche Seewarte. This is the twenty-fifth annual volume of this very valuable publication, and forms, as our readers are aware, but one portion of the useful work that falls to the share of the establishment in question. We need hardly mention how actively the Seewarte is engaged in the prosecution of weather telegraphy and ocean meteorology; it is probably not so well known that, in conjunction with the Danish Meteorological Institute, it publishes a most laborious series of daily synoptic weather charts for the North Atlantic Ocean, in quarterly volumes, which furnish a valuable aid to the study of the cyclonic systems that form so important a factor in the weather conditions of western Europe. The *Jahrbuch* referred to above contains a summary of all the storms which visited the German coasts in 1902, compiled from the registers kept at the storm signal stations in connection with the Seewarte; we think this by no means light compilation is an important appendix to the work.

A communication has been received from Mr. A. Apps in which he desires to point out that the claim of anything new or special can hardly be sustained in respect of the interrupter referred to in our note on p. 470 (March 17). He states that in or about 1858 the late Mr. Ladd made a contact breaker for Mr. J. V. Gassiott, F.R.S., in which the hammer was so arranged as to knock away the contact between the platinum studs very suddenly; this coil gave 12 inch sparks, but when fitted by Mr. Apps with one of his 10 inch contact breakers in 1899 a 14½ inch spark was obtained. Another interrupter on the Gassiott model, made for Mr. Baines in 1868, was discarded after many experiments. About 1866 a coil designed by Cromwell Varley, F.R.S., was fitted with a hammer arranged to produce a very sudden break, and this also was replaced a few years later by one of the Apps form. Mr. Apps further states that for the last thirty years it has been usual for his coils to give a 10 inch spark with 2 cells (4 volts), and that he has now a coil giving 12 inches freely with a 2 cell storage battery. It may be added that our remark as to the new arrangement performing what the inventors claimed referred rather to the length of spark obtained with a given battery power than to its merits compared with other forms, and it should have been stated that while the 10 inch spark was obtained with the greatest ease from two four-volt storage cells, even an electromotive force of four volts was capable of producing a spark of this length.

In a couple of short printed notes Prof. Moriz Kuhn, of Vienna, describes simple apparatus adapted for class-room demonstrations of Torricelli's theorem, Boyle's and Dalton's laws, and other properties of gases. With a slight modification, a very fair vacuum tube can be obtained with one of the apparatus, or it can be used as an open tube manometer. The whole apparatus is made by Karl Woytaček, 10 Frankengasse, 9th district, Vienna.

Messrs. Vieweg and Son, of Brunswick, have issued a fourth edition of vol. i. part iii. of Dr. Alex. Wernicke's "Lehrbuch der Mechanik." It forms a complete treatise on the theory of elasticity as applied to engineering problems, and deals at considerable length with the statics of loaded beams. In this part of the subject considerable use is made of graphic methods. The book is peculiarly adapted to students of German technical schools, but it also meets the requirements of certain university students and candidates for higher teachers' certificates in that country. It covers a field of study which does not receive the attention which it ought to have in this country; probably no English text-book exists which is written on the same lines. It should receive the careful attention of lecturers on applied mechanics.

A preliminary report on the lead and zinc deposits of south-western Wisconsin, by Prof. U. S. Grant, has been issued as *Bulletin* No. 9 of the Wisconsin Geological and Natural History Society. In order to render the work useful to the public in general, there is a popular account of the physical features, geology, and genesis of ore deposits, occupying half of this little volume. The lead and zinc ores occur in Cambrian, but mainly in the Trenton and Galena Limestones of the Ordovician. The original minerals of the ore-deposits are the sulphides, galena, sphalerite and marcasite. Smithsonite and iron oxides are secondary minerals, having been formed from the alteration of the original sulphides. The secondary minerals occur in the rocks above the level of ground water, or in the belt of weathering. The original minerals, with the exception of galena, which is closely associated with both the original and secondary minerals, occur below the level of ground water. The order of deposition is noted as (1) marcasite, (2) sphalerite (sometimes with galena), (3) galena. The author points out the method of occurrence of the ores, and explains their origin as due partly to deep-seated or artesian circulation of water, and partly to down water circulation. The methods of mining and the resources of the area are duly considered.

The March number of the *National Geographic Magazine* deals chiefly with Manchuria and Korea. A good war map, with insets, prepared by the American War Department, is included, and there is a specially valuable account of Russian development of Manchuria by Mr. Henry B. Miller, United States Consul at Niuchwang.

Except for a note by Mr. D. W. Freshfield on the road to Tibet, the current number of the *Geographical Teacher* is chiefly devoted to reports of the proceedings of the Geographical Association, of conferences on the teaching of geography, and to reprints of papers read. The discussion on the Royal Geographical Society's syllabus, by experienced school teachers of the subject, is of special interest and value.

The February number of *La Géographie* contains articles on the Lenfant expedition, which has discovered a continuous watercourse between the Logone and the Benoué, *i.e.* between the Tchad and Atlantic basins; on the exploration of Bolivia; on the province of Bathang; and on the country of the Hereros. There is also a number of valuable notes, including one on the utilisation of water-power in la Mayenne and la Manche, and another on the present state of the Russian geodetic and topographic surveys.

We learn from the *Bulletin* of the Society of Naturalists at St. Petersburg (No. 1) that a new expedition for the exploration of the Caspian Sea is to be sent out early this spring. It is a continuation of the Aral-Caspian expedition which worked some thirty years ago. The party will include such explorers as MM. Knipovitch and Lebedintseff, well known by their explorations of the White and the Black Seas. The chief aim of the expedition is the hydrobiological exploration of the Caspian Sea and the biology of the Caspian herring

THE *Memoirs* of the St. Petersburg Society of Naturalists (botanical section, vol. xxiii.) continue to bring out new fascicules of the valuable work, "Flora Caucasica Critica," by MM. N. Kuznetsoff, N. Busch, and A. Fomin. The descriptions of the species and varieties are given in Latin, as also all the indexes and the indications concerning the geographical areas of each species; but the remarks added to the above, sometimes extremely interesting, as also the introductory notes to each family, are in Russian.

THE identification of Mexican and Central American plants is receiving special attention from workers in the Gray Herbarium of Harvard University. Mr. J. R. Johnston has contributed to the *Proceedings* of the American Academy of Arts and Sciences a revision of the genus Flaveria, which belongs to the order Compositæ. This genus may be described as Mexican, but is not confined to the country. In a paper published in the *Proceedings* of the Boston Society of Natural History, Mr. B. L. Robinson also deals with plants collected in Mexico and Central America, and describes several new species, amongst others, for the genera Eupatorium, Mikania and Mimosa.

AMONGST the plants forwarded from British New Guinea by the Lieutenant-Governor to Mr. F. Bailey, the colonial botanist in Queensland, to be named by him, the more interesting are a species of Citrus which seems to be suitable for a graft-stock; a euphorbiaceous plant, *Baccaurea papuana,* which, as in the case of other species of the genus, provides edible flowers and fruit; and *Pongamia glabra,* a leguminous plant, of which the leaves and seeds are known to possess therapeutic properties. The recent additions to the flora of Queensland made by Mr. Bailey have either been incorporated into his book direct or have appeared in the *Queensland Agricultural Journal,* but a *Bulletin* was issued last year by the Department of Agriculture which contains a list of newly recorded fungi.

WE are glad to see that Mr. Thompson, who has so long held the office of deputy superintendent and head-keeper in the Gardens of the Zoological Society, has been rewarded with the society's silver medal in recognition of his conspicuous success in the management of the animals under his charge.

NOS. 4 and 5 of the first volume of the *Physiological Publications* of the University of California contain reports of two addresses—one by Prof. W. Ostwald on the relations of biology and the neighbouring sciences, and the other by Prof. J. Loeb on the limits of biological research—delivered at the dedication of the Rudolph Spreckel Physiological Laboratory in August last.

JUDGING from its thirty-seventh report (for last year), that admirable institution, the Rugby School Natural History Society, continues to enjoy a flourishing career, and to be well supported by the members of the school. Among its contents is an illustrated paper by Mr. J. C. F. Fryer on British thrushes, admirable in general plan, but in which the author seems in certain instances to use the term "genus" where he means "group."

THE *Naturalist* for February contains a reproduction (from the *Transactions* of the Entomological Society) of one of Prof. Poulton's beautiful and instructive plates illustrating the colour adaptations of caterpillars to their surroundings under artificial conditions. Among the contents of the March number of the same serial is a description, by Mr. C. T. Trechman, of flint implements of Neolithic age discovered on the coast of Durham.

IN a note on the osteology of some berychoid fishes (the group typified by the members of the family Berychidæ, or slime-heads), published in the *Proceedings* of the U.S. National Museum (No. 1366), Mr. E. C. Starks directs attention to a distinctive feature of the occipital region of the skull. In ordinary percoid fishes the basioccipital forms a concave surface with a deep pit in the centre, while the exoccipitals are small and in most cases separate, and present flat oblique facets for the atlas vertebra. In the berychoids, on the other hand, the exoccipitals are large, extensively in contact in the middle line, and form with the basioccipital a regularly concave surface for the atlas. It may be added that in calling this surface a "concave condyle," the author utterly traverses the etymological significance of κόνδυλος, which signifies a convex knuckle.

WE have received from the secretary the abstract of a paper read at a meeting of the Society for Psychical Research on March 21 by Dr. Albert Wilson. It is interesting as containing an account of a patient who suffered at the age of 12½ years from influenza, followed by meningitis, and in consequence developed a multiple personality. The case appears to be strictly analogous to similar cases already reported (*e.g.* James's "Psychology," p. 383 *sqq.*), except that the "personalities" attained the unusual number ten. Such cases are usually hypnotic; in this instance Dr. Wilson lays stress on the dependence of the various states on the comparative activity of different cortical layers. Dr. Wilson suggests that the brain may be composed of "districts, each district representing a personality or small ego"; we agree with him that "the whole subject requires more extended investigation," and the case he describes is certainly an important datum.

HALF-VOLUME VI. of the "Natural History of Animals," by Prof. J. R. Ainsworth-Davis, has now been published by the Gresham Publishing Company, of London. This part, of what is a very well illustrated publication, deals largely with animal development and animal life-histories.

A NEW catalogue has been issued by Mr. Thomas D. Russell, of 78 Newgate Street, London, E.C., giving full particulars of collections to illustrate lectures and demonstrations in geology, physiography, and mineralogy, as well as of all material required by prospectors and mining engineers. The collections prepared to accompany instruction from well-known text-books of these subjects of natural science should be a great convenience to teachers.

MESSRS. MACMILLAN AND CO., LTD., have published several separate parts of "A School Geometry," by Messrs. Hall and Stevens, already reviewed in these columns. We have received the following volumes:—parts i.–iv., containing the substance of Euclid Books i.–iv., price 3*s.*; parts iii.–iv., containing the substance of Euclid Books ii. and iii., and part of Book iv., price 1*s.* 6*d.*; and parts iv.–v., containing the substance of Euclid Books ii., iii., 35–37, and Book vi., price 2*s.*

WE have received a copy of the new edition of the full catalogue of general testing and scientific instruments manufactured by Messrs. Nalder Bros. and Co., of Westminster. This profusely illustrated volume should prove of real assistance to teachers of science responsible for the equipment of physical laboratories, and, as it is five years since the last list of Messrs. Nalder Bros. and Co. was published, a number of new instruments used for scientific instruction and research are included in the present catalogue.

A NEW impression of Sir Oliver Lodge's "Pioneers of Science," which originally appeared in 1893 (see NATURE, vol. xlvii. p. 268), has been published by Messrs. Macmillan and Co., Ltd. The book is an interesting narrative of the careers and investigations of great astronomers whose contributions are links in a chain of scientific history. Personal details give living interest to the work, and the essential points of progress are clearly displayed. But why has not Sir Oliver Lodge taken the opportunity which a new issue afforded him of substituting reproductions of astronomical photographs for the caricatures which appear as representations of star clusters and nebulæ? Figs. 43, 48, 80, 87, 89 and half a dozen others could easily have been superseded by pictures from photographs, instead of being left to irritate astronomers who know what beautiful illustrations are available and to mislead students who have not seen the objects depicted or photographs of them. Fig. 47, explaining the phases of the planet Venus, is upside down.

THE first part of the third volume of *Biometrika* has now been issued by the Cambridge University Press. In addition to miscellanea the following papers are published:—on the result of crossing Japanese waltzing mice with albino mice, by Mr. A. D. Darbishire; graduation of a sickness table by Makeham's hypothesis, by Mr. John Spencer; the measurements of 130 criminals, by Mr. G. B. Griffiths, with an introductory note by Dr. H. B. Donkin; a preliminary note on the protective value of colour in *Mantis religiosa*, by Mr. A. P. di Cesnola; a first study of the weight, variability, and correlation of the human viscera, with special reference to the healthy and diseased heart, by Mr. M. Greenwood, jun.; and a paper in Italian, "Sui Massimi delle Curve Dimorfiche," by Signor Da Fernando de Helguero.

IN the *Journal* of the Society of Chemical Industry for February 15 Messrs. R. S. Hutton and J. E. Petavel describe methods for the preparation and compression on a large scale of pure gases for experimental work. The experimental plant required for the production of large quantities of hydrogen, nitrogen, carbon monoxide and ethylene, at a rate of about 100 litres per hour, is illustrated by diagrams, and interesting facts concerning the compression and storage of these gases are communicated.

IN a communication to the *Journal of Physical Chemistry*, vol. vii. p. 557, Dr. J. W. Mellor points out that the theory that water is in many cases essential to chemical change is of much earlier date than is generally supposed. Mrs. Fulhame, in 1794, appears to have been the first to give a clear statement of the influence of water on chemical transformations, and her observations were published in a work entitled "An Essay on Combustion with a View to a New Art of Dyeing and Painting wherein the Phlogistic and Antiphlogistic Hypotheses are proved Erroneous." In many respects Mrs. Fulhame's theory accords with present-day views.

IT has been known for a considerable time that the products obtained in the electrolytic reduction of nitro-compounds depend upon the nature of the kathode plates. By the reduction of nitrobenzene in alkaline solution azoxybenzene is obtained with platinum and nickel kathodes, azobenzene with lead, tin and zinc kathodes, and by using kathodes of copper, aniline appears as the reduction product. In the current number of the *Zeitschrift für physikalische Chemie* Messrs. Löb and Moore show that the essential factor in determining the reduction is the kathode potential, and with a given kathode potential the same products are obtained in approximately constant proportions independent of the nature of the kathode material.

THE experimental determination of the density of fluorine, made by M. Henri Moissan shortly after the isolation of this element, gave the number 1·260, considerably lower than the figure required by the atomic weight of fluorine, 1·319, and on this account the suggestion has been put forward by Brauner that a certain proportion of free atoms was present in the gas, thus accounting for its remarkable chemical properties. In the current number of the *Comptes rendus* M. Moissan has again taken up this question, with minute precautions regarding the purity of the gas, the result of four experiments being 1·298, 1·319, 1·313, 1·312, or a mean of 1·31. The agreement between the experimental and theoretical figures is thus sufficiently close to disprove the existence of any considerable proportion of free atoms in the gas.

THE additions to the Zoological Society's Gardens during the past week include an Otter (*Lutra vulgaris*), British, presented by Mr. Radcliffe Saunders; a Red Fox (*Canis fulvus*) from North America, presented by Mr. E. W. Bishop; a Lesser Sulphur-crested Cockatoo (*Cacatua sulphurea*) from Moluccas, presented by Miss L. Newman; a Bateleur Eagle (*Helotarsus ecaudatus*) from Africa, presented by Dr. W. J. Ansorge; a Jardine's Parrot (*Poeocephalus gulielmi*) from West Africa, presented by Mr. A. Willoughby Osborne; a White-eared Bulbul (*Pycnonotus leucotis*) from North-west India, presented by Mr. G. Dendle; four Common Pheasants (*Phasianus colchicus*), British, presented by the Hon. Walter Rothschild, M.P.; a Hybrid Pheasant (between *Phasianus reevesi* and *Euplocamus nycthemerus*), presented by the Earl of Ducie; two Wharton's Fruit Pigeons (*Carpophaga whartoni*) from Christmas Island, two Yellow-eyed Babblers (*Chrysomma sinense*), two Sepoy Finches (*Haematospiza sipahi*), three Rose-coloured Pastors (*Pastor roseus*) from India, a Purple-capped Lory (*Lorius domicella*) from Moluccas, a Hybrid Duck (between *Metopiana peposaca* and *Fuligula rufina*), a Hybrid Duck (between *Aex sponsa* and *Dafila spinicauda*), European; five Tuatera Lizards (*Sphenodon punctatus*) from New Zealand, fourteen Alpine Newts (*Molge alpestris*), six Marbled Newts (*Molge marmorata*), European; a Red Newt (*Sperlepes rubra*), a Californian Newt (*Molge torosa*) from North America, deposited; three Japanese Pheasants (*Phasianus versicolor*) from Japan, three Bar-tailed Pheasants (*Phasianus reevesi*), two Amherst Pheasants (*Thaumalea amherstiae*), two Silver Pheasants (*Euplocamus nycthemerus*), two Manchurian Crossoptilons (*Crossoptilon mantchuricum*) from China, purchased.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN APRIL:—

April 5. 4h. Ceres in conjunction with moon. Ceres 1° 1′ S.
7. 10h. 38m. Minimum of Algol (β Persei).
10. 7h. 27m. Minimum of Algol (β Persei).
14. 5h. Jupiter in conjunction with Moon. Jupiter 0° 7′ N.
15. Venus. Illuminated portion of disc = 0·927, of Mars = 0·995.
17. 8h. Mercury 7° N.W. of the Moon.